University of Windsor

Department of Electrical and Computer Engineering

ELEC 8590 Physical *Design Automation for VLSI & FPGAs*

Winter 2021

VPR Setup Guide

The following setup guide is based on UNIX environment.

1) Install UNIX environment
   For e.g. Ubuntu 18.04.2 LTS (https://www.ubuntu.com/download/desktop)
   Install Ubuntu Overview (https://tutorials.ubuntu.com/tutorial/tutorial-install-ubuntu-desktop#0)
   Install UNIX in Windows OS using Virtual Box
   (https://www.youtube.com/watch?v=QbmRXJJKsvs)
2) After Installation is complete: -
   Open Terminal for command line operations (Ctrl+Alt+T) –

   a) Update packages in the UNIX environment using

      $ sudo apt update

   b) Install update for all packages at once

      $ sudo apt upgrade

3) Using the browser download the VPR "Unix-friendly format: gzipped tarfile" from http://www.eecg.toronto.edu/~vaughn/vpr/download.html

4) From the VPR website download "Benchmark Circuits for Routing or Placement and Routing" - .net zip file

5) In Terminal mode type (Command Line Operation)

   Go to the directory of the downloaded file

   $ cd /Downloads

   Untar the downloaded file:

   $ tar –xvf vpr_430_tar.gz

6) Package configuration in order to prevent error while running VPR

a) Install X11/Xlib.h

$ sudo apt-get install libx11-dev ..... for X11/Xlib.h
$ sudo apt-get install libxrandr-dev ..... for X11/extensions/Xrandr.h
$ sudo apt-get install libxi-dev ..... for X11/extensions/XInput.h

b) Install Fonts

$ sudo apt-get install xfonts-75dpi
$ sudo apt-get install gsfonts-x11

7) Go to the VPR folder (if not already there)

$ cd /Downloads/vpr

Open Makefile in text editor

$ nano makefile

Replace the line of makefile:

LIB = -lX11 -lm -R/usr/openwin/lib
with
LIB = -lX11 -lm **-Wl,-rpath=**/usr/openwin/lib

8) To see VPR in action on the (small) sample circuit (e64 from the MCNC benchmark suite) and the sample FPGA architecture files type:

Go to the VPR directory (if not already there)

$ cd /Downloads/vpr

Make VPR executable file

$ make vpr

Run the program (in the vpr directory)

Sample command line:

$ ./vpr e64-4x4lut.net 4x4lut_sanitized.arch e64.p e64.r -route_chan_width 40 –inner_num 3

9) For Further information
Read from VPR folder
   a) Manual_430
   b) README_430